

**CLAIMS**

1. Gas monitoring apparatus comprising a sensor module and a display module, the sensor module comprising:

a first housing;

at least one gas sensor in the first housing;

measurement means in the first housing responsive to said at least one gas sensor to generate an output indicative of a measured gas concentration; and

a wireless transmitter in the first housing arranged to transmit signals indicative of the measured gas concentration;

the display module comprising:

a second housing;

a wireless receiver in the second housing arranged to receive the signals indicative of the measured gas concentration; and

a display supported by the second housing for displaying the measured gas concentration,

wherein the first and second housings are connectable releasably together but are electrically isolated from one another, so that the apparatus can be operated with the display module and the sensor module connected together or physically separated.

2. Gas monitoring apparatus according to claim 1 wherein the transmitter in the first housing and the receiver in the second housing are a radio transmitter and receiver.
3. Gas monitoring apparatus according to claim 2 wherein the transmitter and receiver employ spread spectrum techniques.
4. Gas monitoring apparatus according to claim 1 which is battery powered, by respective batteries in the first and second housings.
5. Gas monitoring apparatus according to claim 4 wherein the batteries are rechargeable, at least the first housing being provided with terminals receivable in a charger to charge the battery or batteries in both housings.
6. Gas monitoring apparatus according to claim 5 which is arranged so that the battery or batteries in the first housing are charged simultaneously with the battery or batteries in the second housing when the two housings are connected together.
7. Gas monitoring apparatus according to claim 6 wherein energy transfer means are provided on the respective housings to transfer sufficient energy from the first housing to the second housing to charge the battery or batteries in the second housing, without requiring electrical contact between the housings.
8. Gas monitoring apparatus according to claim 7 wherein a light source is provided in the first housing, arranged to be activated when the first housing is received in a charger, and a photovoltaic cell is provided on the second housing, the light source and the photovoltaic cell being located adjacent one another when the two housings are connected.

9. Gas monitoring apparatus according to any one of claims 1 to 8 wherein the sensor module is arranged to transmit standard data signals to an associated display module and a broadcast signal to a plurality of display modules.
10. Gas monitoring apparatus according to claim 9 wherein the measurement means in the sensor module defines a gas concentration threshold, data signals indicating a gas concentration exceeding the gas concentration threshold being transmitted as broadcast signals.
11. Gas monitoring apparatus according to claim 10 wherein the measurement means is adjustable to permit the gas concentration threshold to be adjusted.
12. Gas monitoring apparatus according to claim 1 wherein either the sensor module can be designated as a master module that controls a communication protocol between itself and a plurality of display modules, or vice versa.
13. Gas monitoring apparatus according to claim 1 wherein the display module transmits the signals indicative of the measured gas concentration to at least one reader.